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ABSTRACT

Practices are identified for use in teaching vocational education to students with mental disabilities. Iowa's definition of vocational education is presented, along with definitions for seven major delivery areas of vocational education: home economics, industrial arts/technology, trades and industry, business/office education, distributive/marketing education, health occupations, and vocational agriculture. Best practices in the implementation of a vocational education program include careful consideration of student placement, modification of materials, use of effective teaching methods, modification of evaluation procedures, use of competency checklists, development of vocational student organizations, incorporation of vocational education into the development of individualized education programs, and use of cooperative education techniques. Included is a checklist to assist vocational education teachers to assess their personal ability to reach low-achieving students. (JDD)

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Chapter Twenty

Vocational Education: A Source Of Promise For Students With Mental Disabilities

Raymond E. Morley

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OVERVIEW

All states provide for vocational education within their respective secondary and postsecondary institutions, and have their own plans for implementation. The state plans provide impetus and structure for school districts to implement programs and support services. These plans are guided and tempered through 60 years of legislation. The present federal law is entitled "The Carl Perkins Vocational Education Act."

The Perkins Act provides for separate programs and support services for students with mental disabilities. This chapter will identify practices used to accommodate these students in vocational education. These practices represent major guides for teachers to make vocational education work for the benefit of students.

BASIC CONSIDERATIONS

Definition

Vocational education has been defined many ways and debate continues regarding what it should be in secondary schools. Although commonly viewed as being part of the total career development program, every community has to define vocational education in a manner that fits local circumstances. A definition gives a base and rationale to work from and provides a means for explanations to others, including students, parents, employers, and other teachers. The following definitions are provided as a base for reference.

Federal legislation defines vocational education as organized educational programs at the secondary (usually grades 9-12) or post secondary levels which are directly related to the preparation of individuals for paid or unpaid employment or for additional preparation for a career requiring other than a baccalaureate or advanced degree. Vocational student organization activities are an integral part of the programs (Superintendent of Documents, 1984).

In Iowa, vocational education is defined as organized educational programs which are directly related to preparation of individuals for paid or unpaid employment or for further specialized training (Bureau of Career Education, 1987).

Traditionally, the field of vocational education has included seven major delivery areas within which programs developed at the local level. These areas should be considered when defining and planning student placements in vocational education at the secondary level:

1. Home economics and related occupations
2. Industrial arts/technology
3. Trades and industry
4. Business/office education

5. Distributive/marketing education
6. Health occupations
7. Vocational agriculture and related occupations (Bureau of Career Education, 1987)

The Iowa definition of each of these is as follows:

Home economics and related occupations

Home economics and related occupations includes instruction to prepare students to be homemakers, consumers, and paid employees. The content of instruction for homemakers and consumers includes food and nutrition, consumer education, family living, parenthood education, child development and guidance, housing, home management, and clothing and textiles. The content of instruction for paid employment includes food production, management and service; child care; apparel and textiles production, management and service; home furnishing and equipment production, management, and service; and institutional and home management support services.

Industrial Arts/Technology

Industrial arts/technology includes instruction to help students become aware of technological systems and potential careers in technology through exploration and actual practice and application of the basic principles involved in various forms of technology. The content of instruction covers manufacturing, energy and power, graphic communications, construction and transportation.

Trades and Industry

Trades and industry includes specialized instruction to prepare students for entry level occupations or further technical training. Specialized instruction is an extension of related instruction received through industrial arts/technology programs. Students are commonly placed in jobs in the community designed to further acquisition of entry level skills in a technological area.

Business/Office Education

Business/office education includes programs that prepare students for planning, organizing, directing and controlling all business systems and procedures. The content of instruction includes preparing, transcribing, systematizing, and preserving written communications and records; preparing and analyzing financial records; collecting accounts and receiving and disbursing money; gathering, processing and distributing information and mail; operating office machines and electronic data processing equipment; storing, distributing, and accounting for inventories of materials; operating telephone switchboards and delivering messages; and performing other business office duties.

Distributive and Marketing Education

Distributive and marketing education includes introducing students to marketing fundamentals and preparing them for careers in marketing. The content of

instruction includes marketing principles, economics of supply and demand, consumer behavior, marketing research, marketing technology, and specialized instruction to prepare students for entry level careers or advanced study in marketing. Specialized instruction is an extension of classroom study where students are placed in jobs in the community to learn skills in one or more of the following: sales, retailing, marketing supervision and management, advertising and promotion, marketing research, distribution, or small business management and entrepreneurship.

Health Occupations

Health Occupations includes instruction to prepare students for careers in the field of health and medical care. Instructional content includes exploration of direct patient care, supportive and diagnostic patient care, supportive health occupations, and health-related occupations. In addition, instruction includes terminology, anatomy and physiology, ethical and legal aspects of health care, health team concept, self-care and wellness, first aid, cardiopulmonary resuscitation, vital signs, and communication skills. Specialized instruction for entry-level careers is conducted by placing students in jobs using the cooperative method. Experience is obtained in one or more of the following: emergency services, health aide, medical-clerical, and allied health.

Vocational Agriculture and Related Occupations

Vocational agriculture and related occupations includes instruction in animal science, crops and soils, horticulture, diversified agriculture, farm management, agriculture mechanics, and conservation of natural resources. Students also explore related careers in agriculture including agribusiness and receive opportunities to work in jobs related to their classroom instruction.

Cooperative Education

Cooperative education is a "method" used in vocational education to train students. Programs are implemented in all seven delivery areas within local school districts. It is defined as:

A method of instruction of vocational education for individuals who, through written cooperative agreements between the school and employers, receive instruction including required academic courses and related vocational instruction by alternation of study in school with a job in any occupational field. These two experiences (in school and job) must be planned and supervised by the school and employers so that each contributes to the person's education and his/her employability. Work periods and school attendance may be on alternative half days, full days, weeks, or other periods of time (Bureau of Career Education, 1986, p. 34).

The cooperative training method is also used outside of vocational programs by special education teachers. The method is practiced in implementing work experience and work-study programs.

Vocational Student Organization

Vocational student organizations are commonly developed in local programs in the seven areas of vocational education. These organizations help students develop

leadership skills, practice cooperation with others, become involved in community-wide projects, and improve self-image and respect. The local organizations commonly form units of state organizations and state organizations meet to form national organizations.

Not all vocational students participate in vocational student organizations and not all teachers form an organization. However, student organizations add formality and professionalism to the training effort and expand the potential of local programs to do more for students. All vocational students can participate in the organizations and many disabled students do. Special education and vocational education staff can work together in developing and maintaining vocational student organizations.

Formal student organizations include:

1. Future Business Leaders of America (FBLA) - Business and Office Education
2. Office Education Association (OEA) - Business and Office Education
3. Future Homemakers of America (FHA) - Home Economics and Related Occupations
4. Future Farmers of America (FFA) - Vocational Agriculture
5. Industrial Arts Student Association (IASA) - Industrial Arts/Technology
6. Vocational Industrial Clubs of America (VICA) - Trades and Industry
7. Distributive Education Clubs of America (DECA) - Distributive and Marketing Ed.
8. Health Occupations Students of America (HOSA) - Health Occupations

Objectives

Vocational education can yield different results for different students. Therefore, placement of students in programs should be guided by the results expected. Vocational education can help students a) acquire useful occupational skills, b) develop safe work habits, c) gain satisfactory work behavior, d) increase skill levels for occupational upgrading, e) increase awareness of need for acquiring basic academic skills, f) increase potential for work placement in related areas, and g) expand their knowledge base and self-confidence to make decisions about training and work (McKinney & Fornash, 1983).

The following section offers ideas about how to put vocational education into action for students with mental disabilities.

BEST PRACTICES

Placement

Vocational education should be considered a long term process and planning should begin early. Vocational education programs are commonly provided between

grades 9 through 12 by local education agencies. These programs are made up of classes and courses beginning with exploration and extending into more refined skill development. Students in high school can complete a full program or take a few classes. Offerings in grades 11-12 often require pre-requisites; advanced typing or word processing should require the student to have taken a three or four class sequence of beginning typing.

Parents and students must be made aware of vocational education programs no later than the ninth grade. Information on all vocational programs in a local school district should be placed in a vocational education handbook and used to guide students, parents, and professionals involved in planning a student's program. In addition to the handbooks, teacher-parent meetings should be established to assure that parents and students understand the handbook content and implications for effecting the student's education and future. Handbooks should contain (a) the title of the vocational program and an over-all (four year) description; (b) a list of classes by grade level with objectives, material needs or lab fees for each and pre-requisites needed for entry status; (c) expectations of parent support and involvement; (d) instructors and other persons or agencies that can be used for assistance; (e) accommodations and support assistance (including special education) that can be provided; (f) evaluation, grading and reporting procedures used; (g) safety considerations and practices followed in each program; (h) liability and student insurance provisions; (i) transportation plans for students in cooperative education and student organization activities; (j) plans for student transition into post-secondary training or employment; and (k) a rational and procedure for placement of students in vocational programs and classes.

Although mainstreaming is strongly supported as a way to educate students with mental disabilities, it is not the only way. Both mainstreaming and separate classes for the disabled are commonly accepted service delivery models.

Before students are placed in vocational education classes, consideration should be given to:

1. deciding whether the student should be mainstreamed or served in a special vocational class,
2. deciding upon clear and measurable objectives of the vocational education class,
3. identifying the "learning problems" and appropriate teaching strategies that accommodate the learning problems,
4. clarifying expectations on grading,
5. establishing procedures for emergencies and preparing the vocational education teacher to handle questions about mental disabilities,
6. identifying personal/social behavior characteristics and management strategies that will be needed to ensure acceptance of the student, and
7. identifying what support will be provided by special education teachers and other special education support staff.

Further, special education and vocational education teachers should question how the students learn and behave. The information obtained will be useful in modifying instruction and altering the environment to accommodate learners. The questions can be used in guiding joint conferences between the vocational education teacher and special education staff.

The proper placement of students with mental disabilities in vocational education classes requires that the persons making the decision for placement recognize the objectives of the training. Therefore, a written set of objectives for each vocational education class should be prepared and shared with special class teachers, students and parents before decisions for placement are made.

Objectives give the vocational education and special education teachers a base to determine the specific skills needed to advance within a given class. As well, objectives serve as a base to building individualized education plans for students.

Material Modification

Modification of instructional methods and materials in vocational courses should be a major consideration in making student placements and maintaining services for students with mental disabilities. The recommendations to follow have been drafted to alert teachers to potential areas that may need attention.

Vocational education courses require many written assignments and much reading and numerous computation exercises. Many formats are used to present ideas to expedite learning and make it enjoyable. The following ideas have been collected from multiple sources and suggest ways to modify curriculum materials to accommodate students who learn in different ways (Benson, 1980).

1. Written assignments or reading materials should be typewritten or printed to ensure legibility. Typewritten material is best because it ensures consistency in the way it is presented to or encountered by learners.
2. Printed or typed materials should be sharp and not faded.
3. Printed materials should not be crowded together.
4. Emphasizing important words with techniques such as underlining and bigger letters helps attract attention to vocabulary.
5. The use of simple sentences reduces confusion.
6. Complex thoughts or multiple directions can be broken down to a simple one-step process listed in sequence.
7. Use task check-off blanks ☐ or boxes ☐ to establish and reinforce task completion.
8. Use simple vocabulary when possible.
9. Color code worksheets or readings.

10. Break large sections of text into smaller parts.
11. For questions on worksheets, give the page numbers in the text or reading materials where the answers can be found.
12. Repeat important sentences, phrases, or paragraphs by:
 - putting them in the margins
 - [boxing] them in and emphasizing the print
 - doing summaries at the beginning of the text (introductory organizer)
13. Develop text in a programmed learning format.
14. Emphasize important concepts, phrases, or sentences with special markings.
15. Use constant terminology throughout text or written assignments when referring to a concept.
16. Use cues within reading material to direct students.
17. Give examples for new terms.
18. Use captions (comic book style), pictures, maps, or graphs to support the meanings of words or ideas.
19. Game formats increase motivation and help to apply concepts and meanings.
20. Use duplicate handouts so students can compare information to the teaching aids being used during lectures and discussions.
21. Use interactive text formats to involve students in text.
 - Leave blanks in sentences and have student fill in blanks from text that is read.
 - Provide outlines of information; have students fill in detailed information in spaces left between outline headings.
 - Give words and word meanings and have students match the meanings and words. Do the same for concepts!
 - Give crisis situations and selections for solving crises. Match or have students solve crises through their own input.
 - Give lists of tasks and have students prioritize tasks into proper sequences or preferred sequences via ranking. Do the same for behaviors, safety, procedures, etc.

- Provide a problem and have students choose from solutions or provide their own solutions.
- 22. Use manipulative materials to sequence ideas, solve problems, or examine options.
- 23. Provide concept cards instead of concepts being printed on regular handouts. One concept is put on each card.
- 24. Use newspapers for applying learning and transferring learning to real life situations.
- 25. Support all text via audio visual reinforcement when possible.

Teaching Methods

The following techniques have proven helpful to vocational teachers when working with disabled learners. They have been taken from multiple sources (Foster, 1982; Department of Education, 1984; Mason, 1985; O'Brian, 1985) and can be used as a recommended list of ideas that special education teachers can share with vocational teachers.

1. Arrange for student to spend an extra class period each day with the special education teacher, reviewing the day's lesson if necessary.
2. Bring students into labs as soon as possible. The success they experience when they are young makes it easier to work with them when they are older.
3. Write out step-by-step instructions for completing a task or working with equipment.
4. Use visuals and examples when explaining.
5. Allow students to repeat tasks. Repetition sometimes up to 20 to 30 times is necessary.
6. Invite guest speakers to talk about topics covered in class to reinforce learning and make it real.
7. Visit businesses to observe persons completing tasks being taught in the classroom.
8. Use materials and forms in the classroom that come from businesses in the community to instill relevancy.
9. Break down complex tasks into small steps.
10. Let success beget success. Let students risk failure only when you are convinced the student has sufficient confidence to take the risks.

11. Put your rules in writing. Orient students to the rules and the consequences for not following the rules. Role play if necessary.
12. Whenever possible present concepts through senses - sight, sound, touch.
13. Team up students with mental disabilities with regular students who compliment one another.
14. Crosscheck basic understandings and don't assume students already know.
15. Tell students what they are doing wrong and help them change.
16. Call on students with mental disabilities often to respond to questions and presentations.
17. Praise students as frequently as possible.
18. Help students to learn to learn by practicing different learning strategies - brainstorming, comparing, summarizing, asking questions, organizing, and so forth.
19. Read test directions aloud in class and demonstrate if necessary.
20. Walk about room and observe student progress while testing and provide individual help.
21. Read entire tests aloud for poor readers or non-readers, especially where time is a factor.
22. Teach students study skills.

The following checklist was developed to assist vocational education teachers to assess their personal ability to reach low achieving students. It can be applied in local settings in a team effort to analyze and improve teaching techniques. It can serve as an excellent base document for discussion and as a reference point for special education teachers to ask questions about the interaction of the vocational teacher and students with mental disabilities. The checklist was taken from the Vocational Education Journal, (Martin, 1985).

Reaching Low Achievers--Checklist

- | | Yes | No |
|---|--------------------------|--------------------------|
| 1. Do you call on low achievers less often than on high achievers to respond to questions or make classroom presentations | ☐ | ☐ |
| 2. Do you provide low achievers with less accurate and detailed feedback? | ☐ | ☐ |
| 3. Do you fail to give low achievers feedback on classroom responses? | ☐ | ☐ |

- | | | |
|--|--------------------------|--------------------------|
| 4. Do you praise low achievers more frequently than high achievers for marginal or inadequate public responses? | ☐ | ☐ |
| 5. Do you praise low achievers less frequently after successful classroom experiences? | ☐ | ☐ |
| 6. Do you ask low achievers fewer follow-up questions and give fewer clues to answers? | ☐ | ☐ |
| 7. Do you wait less time for low achievers to answer questions? | ☐ | ☐ |
| 8. Do you interrupt low achievers more often when they respond to questions? | ☐ | ☐ |
| 9. Do you provide the answer or call on someone else instead of trying to improve a low achievers response by giving clues or rephrasing the question? | ☐ | ☐ |
| 10. Do you require less and lower quality work from your low achievers? | ☐ | ☐ |
| 11. Do you locate low achievers in a group or seat them far from the teacher? | ☐ | ☐ |
| 12. Do you pay less attention to low achievers in academic situations - smile less often and avoid eye contact? | ☐ | ☐ |
| 13. Do you use less direct instruction with low achievers and more seat work? | ☐ | ☐ |
| 14. Do you grade low achievers tests differently, failing to give them the benefit of the doubt in borderline situations. | ☐ | ☐ |
| 15. Do you interact less frequently in public with low achievers? | ☐ | ☐ |

* You should answer "no" to all questions.

* If you have 5 or more yeses - seriously consider changing your behavior.

Vocational Student Organizations (VSO's)

Students with mental disabilities can participate in vocational student organizations and can gain a great deal by experiencing the activities of the organization. When students feel a part of a VSO their rapport with teachers can improve and discipline problems can be reduced. Regular students can also benefit by being exposed to disabilities and learning to appreciate differences in working cooperatively with others on common projects.

Grading

One problem commonly cited in the use of traditional grading procedures is the manner by which the marks are determined. In some of the vocational courses a majority of the grades or rank in the class may be determined on written tests and written work. A student with mental disabilities may experience difficulty in completing written tasks. Written tests and written work may not, therefore, adequately reflect the student's knowledge level. Teachers need to examine very carefully what procedures should be used in determining the appropriate grade or mark. Alternative or supplementary ways of evaluating and reporting student progress could include the use of other measurement devices. For example, the teacher might use some or all of the following methods: class interaction and discussion, projects, papers, verbal reports, student interviews, anecdotal records, logs, student files, and modified tests. By the utilization of some of these techniques, the teacher may not need to make modifications in the grade reporting system for the student with a mental disability. Instead, the strategy might be to employ alternative ways of assessing the student's progress toward the course objectives. In these cases, the classroom teacher would modify the evaluation procedures and not the progress reporting system.

Vocational teachers have often expressed a concern that they cannot vary the competencies required for success in their respective courses for the student with a disability. They argue that adjusting grading criteria provides an inaccurate representation of student skills, and further, that industry and business maintains standards that they expect of program graduates; therefore, allowing a student differential criteria for competencies would bring discredit to the school's training program. This is a legitimate concern if the school's vocational program chooses to provide only a letter grade or a dichotomous grade, and does not provide the potential employer with a list of skills or competencies completed by the student. The question should not be one of standards but rather reporting what skills the student has mastered. This problem can be resolved by the establishment of a competency checklist in a developmental sequence. If requested by the employer and approved by the student or his or her parents, a form containing information on the student's performance could be forwarded at the time of employment.

The curriculum of the vocational programs or the content areas does not necessarily have to be watered down because students with mental disabilities are enrolled. Instead, the instructional and evaluation procedures may need to be redesigned to more accurately reflect the needs and knowledge of participating students.

Table 1 provides a suggested list of adaptive procedures for modifying the evaluation and testing procedures for the student with a mild disability.

Competency Checklists

Competency checklists have been used in skill-oriented vocational courses. Checklists serves as guides to student progress toward goals stated in the instructional plan or individual education plans. For example, in the vocational auto mechanics course learning units broken into small modules permit easy assessment of skill acquisition. The advantages checklists offer include (a) more value than a grade

Table 1
Alternative Methods of Assessing Student Progress

Types of Modification	Procedures
Verbal tests	Test administered verbally by the teacher, paraprofessional, peer, or others to permit student to complete similar requirements.
Shortened test	Reduce the number of test items on a scale to permit additional time.
Levels of questions	Use different levels of questions for different students--similar to shortened tests, but the items are written at a more concrete level.
Length of time for completion	Increase the amount of time a student has to complete a test to allow for slower writing, reading, comprehension, or performance speed. This is important with many students.
Frequency of tests	Utilize short written, verbal, or performance measures given on a frequent basis--daily or weekly--to assess student progress. This allows for more feedback on student progress.
Type of responses	Provide for short answer or simple marking of correct response by the student. Measures should be matched to students' response strengths.
Verbal review of information	Use verbal review of information rather than testing. Have student review the course or unit content with teacher, paraprofessional, peer, or resource teacher. This permits the student to present what he or she has learned and does not require that the student be tested via traditional test items.
Peer tutoring	Include peer tutoring for testing purposes. This permits the student to learn from peers. The peer tutor should receive some basic training.
Development of instructional packet	Have student develop a packet of materials to show knowledge and understanding of content of the unit. This shows what the student believes is important.

Checklists	Use developmental checklists to permit the observation of student learning in a sequential and organized way that shows student progress. Checklists are good in vocational courses. They permit the teacher to limit the number of formal tests.
Class interaction	Assess student participation in discussion which indicates student mastery of content.
Course projects	Measure progress towards final course product. In vocational classes, the standards may need to be altered when making comparisons with other students.
Performance	Assign the student to complete the task that requires specific skills you wish to measure. Evaluate the student's performance by observation or use of a checklist.

alone, (b) more helpful information for the student, (c) meaningful information to parents and future employers, (d) more detailed information about the student's performance, (e) a pinpointing of weaknesses in the school instructional program, and (f) the prioritization of skills.

Implications

The checklist is an excellent way for the teacher to indicate the progress a student has made during instruction. The competencies for the checklist are derived from the course objectives and include means for determining student mastery of each step of the necessary skills. Detail and ease of use must be balanced in the use of checklists. Generally, the more difficulty the student is having, the more detailed the checklist needs to be.

An additional advantage of checklists is that they may be designed to allow varying mastery or application of each objective. Depending on school policy, progress may be translated into a letter or number grade or reported directly using the checklist.

The Iowa Training School for Boys at Eldora uses a competency based certificate (Figure 1) to report student progress in vocational programs. It is offered here as an example of a checklist that can be used to identify student progress.

Individualized Education Programs (IEP'S)

Public Law 94-142 (The Education for All Handicapped Children Act) and Public Law 98-524 (The Carl Perkins Vocational Education Act) establish the expectation that all educators work together and be responsible for educating persons with disabilities. Vocational legislation compliments special education legislation by

Figure 1

MIDLAND PARK SCHOOL

ELDORA, IOWA

VOCATIONAL CLIMATE CONTROL

Certificate of Competencies



Be it known that _____ has successfully completed the competencies listed below. Given this _____ day of _____, 19____.

AIR CONDITIONING AND REFRIGERATION

Orientation ()
 History and Development ()
 Job Opportunities ()
 Safety ()
 General Safety ()
 Specific Safety ()
 Tools ()
 Hand Tools ()
 Special Tools ()
 Measuring ()
 Tubing and Pipe ()
 Tubing Operation ()
 Pipe ()
 Basic Compression Refrigeration ()
 Basic Mechanical Refrigeration ()
 Refrigerant System Accessories ()
 Refrigerants ()
 Evacuation ()
 Sealed System Servicing ()
 Pressurizing and Leak Testing ()
 Charging ()
 Domestic Refrigeration ()
 Refrigeration Fundamentals ()
 Sealed System Components ()
 Refrigeration Defrost and Electrical Controls ()
 Mechanical Servicing of Domestic Refrigeration ()
 Window Air Conditioning ()
 Fundamentals of Window Air Conditioners ()
 Job Orientation ()
 Orientation of Job ()
 Applying for a Job ()
 Job Application ()
 Customer Relations ()
 Business Management ()
 Managing a Business ()
 Psychrometrics ()
 Residential Heat Loss and Heat Gains ()
 Heat Loss and Gain ()
 Duct Design and Sizing ()
 Duct Systems ()
 Air Treatment ()
 Treating of Air ()
 Residential Systems ()
 Residential Systems ()

CARPENTRY

Introduction ()
 Safety and First Aid ()
 Related Information ()
 Lumber ()
 Measuring ()
 Hardware and Fasteners ()
 Tools ()
 Hand Tools ()
 Power Tools ()
 Site ()
 Builders Level and Transit ()
 ELECTRICITY ()
 Diagnosing Circuit Problems ()
 Using Voltmeter ()
 Using Ohmmeter ()
 Troubleshooting Circuits ()
 Diagnosing Appliance Problems ()
 Reading Diagrams and Schematics ()
 Tracing Wires ()
 Troubleshooting Appliance Circuits ()
 Repairing Appliances ()
 Diagnosing Motor Problems ()
 Identifying Different Motor Types ()
 Wiring Motor Control Circuits ()
 Installing Motor Control Devices ()
 Wiring Motor Control ()
 Troubleshooting Motor Control Circuits ()
 HEATING ()
 Introduction ()
 Brief History of Heating ()
 Heat Sources and Combustion ()
 Glossary ()
 Room Heat Transfer Module ()
 Forced Air System ()
 Heat Exchangers ()
 Fuel Oil Burners ()
 Gas Orifices, Burners and Flame ()
 Comfort Heating Furnaces ()
 Electric Heating ()
 Infrared Heating ()
 Humidification ()
 Solar Energy ()
 Hot Water and Steam Systems ()
 Heating Boilers and Piping ()
 Venting ()
 Basic Heating Control ()

PLUMBING

Orientation ()
 Occupational Introduction ()
 Human Relations ()
 General Safety ()
 Applying for a Job ()
 Tools and Equipment ()
 Basic Hand Tools ()
 Power Tools ()
 Equipment ()
 Plumber's Tool Box ()
 The Plumbing Truck ()
 Blueprints, Measurements and Calculations ()
 Blueprint Reading ()
 Isometric Sketching ()
 Rough-in Locations ()
 Building and Plumbing Codes ()
 Metric Measurement for Plumbers ()
 Systems Rough-in ()
 Drainage Systems ()
 Water Systems ()
 Joining Pipe ()
 Pipe Fitting ()
 Pipe ()
 Residential Systems ()
 Private Water Systems ()
 Septic Systems ()
 Water Treatment ()
 Fuel Piping Systems ()
 Fixture and Appliance Installation ()
 Auxiliary Systems ()
 Water Valves and Faucets ()
 Drainage Connections ()
 Fixtures and Appliances ()
 Water System Maintenance and Repair ()
 Water Systems Maintenance and Repair ()
 Drainage Systems Maintenance and Repair ()
 SHEET METAL ()
 Introduction ()
 Opportunities ()
 Sheet Metal Tools ()
 Sheet Metal Machinery ()
 Shop Safety ()
 Getting Acquainted ()
 Sheet Metal Types ()
 Material of the Sheet Metal Trade ()
 Customers for Sheet Metal ()

Developing Attitude

Using Patterns ()
 Cutting Metal ()
 Punching, drilling and riveting ()
 Gaining Knowledge ()
 Folding Edges ()
 Making Seams ()
 Turning, Burring and Raising ()
 Forming, Crimping, Beading and Grooving ()
 Learning by Doing ()
 Soldering ()
 Drawing for Pattern Drafting ()
 Making and Matching Simple Patterns ()
 Visualizing Your Work ()
 Parallel Line Development ()
 Triangulation ()
 Radial Line Development ()
 Moving Ahead in the Field ()
 Plastics ()
 Short Method of Pattern Development ()
 WELDING ()
 Oxyacetylene Gas Braze Welding ()
 Oxyacetylene Setup ()
 Braze Weld Stringbead ()
 Braze Weld Square Butt Joint ()
 Oxyacetylene Fusion ()
 Safety ()
 Setup Equipment ()
 Get Proper Flame ()
 Lay Beads with Filler Rod and Without Filler Rod ()
 Buttweld Joint with Filler Rod ()
 Oxyacetylene Cutting ()
 Safety ()
 Setup Equipment ()
 Set Proper Flame ()
 Lay Out Pattern ()
 Make Cuts and Restart Cut ()
 Cut Hole in Steel ()
 Shielded Metal Arc Welding ()
 Setup Welder and Get Proper ()
 Amperage ()
 Electrode Identification ()
 Stringer Bead ()
 Stop and Start Beads ()
 Buttweld ()

446

Total hours

X Completed

0 Not Completed

Instructor

Principal

Superintendent

promoting the idea that vocational educators and special educators work cooperatively to establish individualized education programs (IEPs) for students with disabilities entering vocational education. Often, vocational educators are expected to be involved in the IEP development without the advantage of proper training or experience. Consequently, they need the guidance of special educators, including help understanding the elements and steps involved in the process, and the means by which they can contribute. Some released or extended contract time for special education and vocational education teachers to work on IEP development to get cooperative planning started and smoothed out would be very helpful.

The specific role that the vocational educator plays in IEP development for the student with a mental disability should be clarified at the local level. If it is not clarified, confusion and conflict can be expected. Vocational educators need to establish a good understanding of what is expected of them in IEP development and their understanding should be reinforced by the principal of their building. The role of the vocational teacher must be worked out locally to accommodate working schedules, contracts, class loads, personal styles of interaction, IEP formats, and so forth. What can be done by one teacher may not be possible for another.

The following ideas are provided as a resource for establishing understanding of the vocational teacher's role at the local level. The ideas can be used for planning inservice or for guiding program implementation on a team basis.

The vocational teacher can:

1. develop and update specific goals and objectives for each class they teach and share them with special educators for the purpose of establishing goals and objectives for students;
2. identify and document academic competencies and thought processes that students must possess to be able to use existing materials and equipment and complete tasks expected within classes;
3. identify and document teaching techniques used in classes;
4. evaluate teaching materials for reading and math accommodations;
5. be a participant in IEP team meetings including all professionals and parents;
6. meet with parents to discuss vocational programming;
7. evaluate students' with mental disabilities progress and document progress using agreed upon evaluation techniques;
8. develop accommodations for instruction;
9. suggest types of support assistance needed from the special education teacher;
10. provide suggestions for advanced, cooperative or other appropriate training;

11. research, review and recommend equipment and environmental modifications to accommodate learners; and
12. work cooperatively with the special class teacher to team teach where possible.

Activities the vocational education teacher could facilitate are:

1. teaching specific job skills to prepare the student for employment or continuing education;
2. teaching job-related skills such as work habits, work attitudes, career awareness, decision-making, and job-seeking skills which will enhance the student's chances for success; and
3. assisting other staff persons in conducting student assessment (e.g., work skills, personal strengths) and identifying appropriate assessment instruments.

Vocational teachers are often uninformed about what special education teachers do. They are especially confused about what support they can expect from special education teachers. Therefore, it is very important that special education teachers make a list of things that they can do to facilitate the success of students with mental disabilities in vocational classes. This support can become part of the IEP planning. Some possibilities are to:

1. serve as an assistant in vocational labs to provide individual assistance;
2. provide tutoring in essential content needed for success in vocational education;
3. help supervise extended (before, during or after school) labs designed to give students more time to complete projects;
4. review vocational texts and help design materials that are more appropriate;
5. administer tests for mentally disabled students;
6. help develop alternatives for evaluating student progress;
7. help develop teaching materials (visuals, workshops) that are more appropriate for mentally disabled students;
8. review and critique vocational course objectives;
9. help task analyze activities within vocational classes to break tasks down into more achievable expectations;
10. review projects and equipment in vocational labs and help develop safety devices and jigs to accommodate students;
11. help locate job training potentials in the community and assist in job related instruction;

12. develop individual transition plans for additional secondary and post secondary training; and
13. help develop special publications for communicating vocational options open to students in high school.

Local districts have developed many different formats for individualized education programs (IEPs), but all must include the student's present level of educational performance, annual learning goals and short term objectives for the student, the extent to which the student will be able to participate in regular educational programs, projected dates for initiation and duration of services, and evaluation procedures for determining which objectives are being achieved.

The following goals and objectives are examples of how vocational education can be worked into an IEP.

Goal: The student will identify, remove, and replace automobile body and frame components.

Objectives:

1. The student will describe metal configurations and their purpose, frame shapes and their construction, and low center of gravity with 80% accuracy as measured by written and oral tests.
2. The student will . . .

Cooperative Education

Many vocational programs use the cooperative method to help educate students. Students are placed in the community for part-time paid employment to reinforce the training they are receiving through classroom instruction. When students with mental disabilities are involved, modifications in the process may be necessary. The following questions identify benchmarks for checking into cooperative programming and pinpointing areas for expansion, improvement and support assistance.

1. Are the Cooperative Programs used to help students explore careers (ages 14+) or train for careers (ages 16+)? Students should be able to explore as well as train and if a comprehensive program is not in place it should be considered.
2. Are pre-requisites required for entry into cooperative programs? Do the pre-requisites discriminate unfairly against students with mental disabilities?
3. Are subminimum wages used to assist in the employment of students? If subminimum wages are used has the practice been properly handled under Child Labor Laws as it relates to disabilities?
3. Are Targeted Jobs Tax Credits (TJTC) used in the employment of students? Are the credits being handled properly? If not, why not? Tax credits can boost employer participation.

4. Are Job Training Partnership Act funds being used to support the salaries of student workers? If not, why not?
5. Is on the job training program of the Association for Retarded Citizens being utilized? Is the program necessary to the efficient functioning of the existing program?
6. Is a vocational rehabilitation counselor working cooperatively with the program to provide available services?
7. Is the evaluation system used with students helpful to students? Is it conducted often enough? Does the system identify possibilities for modifications at the work place?
8. How are parents involved in the cooperative program? Are they informed of the program and the evaluation processes used to report student progress?
9. Are training plans and agreements being used? Are the plans and agreements appropriate for mentally disabled students?
10. Is there an advisory committee established for the cooperative program and does the committee have an appropriate representative for disabled persons?

It is very important that special educators understand cooperative programming in order to be effective either in providing viable support to vocational educators or in establishing separate programs for students with mental disabilities. Therefore, it is recommended that teachers seek out training in the cooperative method.

Some excellent resources for information include:

Coordination of Work Experience
17 Modules Written for Work Experience Coordinators
Burgess Publishing Company
Minneapolis, MN 55435

Procedures Handbook for Special Needs
Work-Study Coordinators
Aspen System Corporation
1600 Research Boulevard
Rockville, MD 29850

SUMMARY

There are seven delivery areas of vocational education that can be considered for designing support services or separate programs for students with mental disabilities. Each delivery area includes instructional programs, cooperative programming and vocational student organizations which offer different opportunities for students and which require unique modifications for accommodating students. Specific ideas for accommodating students with mental disabilities in placement,

instruction, student organizations, and cooperative programming have been provided in this chapter. As well, specific ideas were provided regarding how vocational education can be incorporated into the development of an IEP. Attention was given to student evaluation and grading since monitoring student progress in vocational education remains critical to appropriate programming. The ideas provided establish a basis for experimentation on what vocational educators can do for a student with mental disabilities. The point is made that there are no sure answers and only through experimentation will results occur.

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